COMPLETE LISTING OF ALL CLAIMS IN THE APPLICATION

1. (previously presented) A process for preparing highly reactive polyisobutenes having a terminal vinylidene group content of more than 80 mol% and an average molecular weight of from 500 to 5000 dalton by cationic polymerization of isobutene in the liquid phase in the presence of a complex comprising boron trifluoride at from +40° to -60°C, which comprises polymerizing in the presence of a complex comprising boron trifluoride and

   a) a primary alcohol having 1-20 carbon atoms or a secondary alcohol having 3-20 carbon atoms, or a mixture of these alcohols, and

   b) an ether containing no tertiary alkyl groups and having the formula I

$$R^1\text{-}O\text{-}R^2 \qquad \text{I},$$

   where R^1 and R^2 are primary or secondary alkyl groups having 3-10 carbon atoms, with the proviso that at least one of R^1 and R^2 is a secondary alkyl group.

2. (previously presented) A process as claimed in claim 1, wherein the secondary alcohol a) used is isopropyl alcohol and/or 2-butanol.

3. (previously presented) A process as claimed in claim 1, wherein the ether b) used is diisopropyl ether, di-sec-butyl ether and/or isopropyl sec-butyl-ether.

4. (previously presented) A process as claimed in claim 1, wherein the primary and/or secondary alcohol a) and the ether b) are used in a molar ratio of from 0.01:1 to 10:1.

5. (previously presented) A process as claimed in claim 1, wherein the primary and/or secondary alcohol a) and the ether b) are used in a molar ratio of from 0.02:1 to 2:1.

6. (previously presented) A process as claimed in claim 1, wherein boron trifluoride, primary and/or secondary alcohol and ether are combined in the polymerization reactor to generate the complex in situ in the polymerization mixture.

7. (previously presented) A process as claimed in claim 1, wherein the boron trifluoride/ether complex is preformulated and is introduced, together with the primary and/or secondary alcohol or separately, into the solvent or monomer feed to the reactor or directly into the reactor.

8. (previously presented) A process as claimed in claim 1, wherein polyisobutenes having a terminal vinylidene group content of more than 90 mol% are polymerized at an isobutene conversion of up to 95% using a preformed boron

trifluoride/isopropanol/diisopropyl ether complex, a molar secondary alcohol/ether ratio of from 2:1 to 1:5 and a boron trifluoride/diisopropyl ether ratio of from 0.6:1 to 0.9:1.

9. (previously presented) A process as claimed in claim 1, wherein the isobutene source is a C_4 cut comprising isobutene in an amount of at least 6% bu weight.

10. (previously presented) A polyisobutene having an average molecular weight of from 500 to 5000 dalton and a terminal vinylidene group content of more than 90%, obtainable by cationic polymerization of isobutene in the liquid phase with the aid of boron trifluoride ascatalyst at from 40 to -60°C in the presence of a boron trifluoride complex with

a) a primary alcohol having 1-20 carbon atoms or a secondary alcohol having 3-20 carbon atoms, or a mixture of these alcohols, and

b) an ether containing no tertiary alkyl groups and having the formula I

$$R^1\text{-}O\text{-}R^2 \qquad \text{I},$$

where R^1 and R^2 are primary or secondary alkyl groups having 3-10 carbon atoms, with the proviso that at least one of the radicals R^1 and R^2 is a secondary alkyl group.

11. (previously presented) A process for preparing highly reactive polyisobutenes having a terminal vinylidene group content of more than 80 mol% and an average molecular weight of from 500 to 5000 dalton of a complex comprising boron trifluoride at from +40°C to 60°C, which comprises polymerizing in the presence of a complex comprising boron trifluoride and

a) a primary alcohol having 1-20 carbon atoms or a secondary alcohol having 3-20 carbon atoms, or a mixture of these alcohols, and

b) an ether containing no tertiary alkyl groups and having the formula I

$$R^1\text{-}O\text{-}R^2 \qquad \text{I},$$

where R^1 and R^2 are primary or secondary alkyl groups having 3-10 carbon atoms, with the proviso that at least one of R^1 and R^2 is a secondary alkyl group, or R^2 is methyl or ethyl.